



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,003	01/19/2006	Eiji Kambara	Q77266	5164
23373 7590 04/14/2009 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER				
GRAY, JILL M				
ART UNIT		PAPER NUMBER		
1794				
MAIL DATE		DELIVERY MODE		
04/14/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/565,003

**Applicant(s)**

KAMBARA ET AL.

**Examiner**

Jill Gray

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S5108)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

The rejection of claims 1-18 under 35 U.S.C. 103(a) as being unpatentable over Morita et al., US 2003/0044603 A1 is withdrawn in view of applicants' arguments.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Komatsu et al., 4,816,289 (Komatsu).

Komatsu discloses a vapor grown crimped carbon fiber having a multilayer structure comprising an inner layer part and an outer layer part with a hollow structure in the inside thereof, wherein the carbon layers are arranged substantially in parallel with the longitudinal axis of the filament and arranged substantially in the form of growth rings, further disclosing an embodiment wherein the carbon filament has such as small hollow portion in the center of the filament that the filaments are regarded as substantially solid filaments, as required by present claims 1-4 and 9. See entire document, and for example abstract and column 3, lines 63-68. In addition, Komatsu discloses that the crimped carbon fiber has a crimp percentage of 5 to 50%, which meets the present requirement of "0.5% or more" as set forth in present claim 5. See column 5, lines 46-54. The diameter of the fiber taught by Komatsu is in the range from

0.01 to 15  $\mu\text{m}$ , (which corresponds to 10 nm to 15000 nm) and a fiber length of in the range of from 20  $\mu\text{m}$  to 20mm, as required by present claim 6. See column 6, lines 5-25. Regarding claim 8, Komatsu discloses that the carbon structure has carbon network layers (002) stacked at interlayer spacings (d002) of 0.345 or less and a Raman ratio (Id/Ig) of 1 or more. See column 5, lines 20-45. This teaching meets the requirement of present claim 8.

Therefore the teachings of Komatsu anticipate the invention as claimed in present claims 1-6 and 8-9.

***Claim Rejections - 35 USC § 103***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 7, 10-11, and 13-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Komatsu et al., 4,816,289 (Komatsu) as applied above to claims 1-6 and 8-9.

Komatsu is as set forth above but does not specifically teach the surface area of the fibers as required by claim 7 or the specific sulfur atom vapor phase concentration in the heating zone as required by claim 11.

Regarding claim 7

Komatsu is as set forth above but does not specifically teach the surface area of the fibers as required by claim 7.

The teachings of Komatsu are drawn to a crimped carbon fiber that has substantially the same structure, crimp percentage, fiber outer diameter, fiber length, X-

ray diffraction, Raman spectrum and within the present claimed range, accordingly, the examiner has reason to believe that the specific surface area would be within the present claimed range as well, and thus would be inherent in the absence of factual evidence to the contrary. Applicants are invited to provide such evidence.

Regarding claim 10

Komatsu discloses that the crimped carbon fiber can be used with synthetic resin, adhesive, rubber or the like to form a prepreg or perform, wherein the fiber content is in the range of from 0.5 to 99.5% by weight. See column 12, lines 5-24. It is the examiner's position that this fiber content range is broad and would necessarily encompass the crimped carbon fiber being present in an amount of 5 vol%, and hence, this requirement of claim 10 is inherent in the teachings of Komatsu in the absence of factual evidence to the contrary. Applicants are invited to provide such evidence.

Regarding claims 11, 13-18

Komatsu is as set forth above but does not specifically teach the specific sulfur atom vapor phase concentration in the heating zone as required by claim 11.

Komatsu discloses a method for producing the crimped carbon fiber comprising contacting a carbon source and a catalyst source with a sulfur source in a heating zone to produce vapor grown carbon fiber, as required by present claim 11. See column 13, lines 48-66 and column 20, lines 13-58, and column 25, lines 25-32 and 63-66. As to the specific sulfur atom vapor phase concentration in the heating zone, it is the examiner's position that the since the vapor grown crimped carbon fibers of Komatsu are the same as or substantially similar to those crimped carbon fibers contemplated by

applicants, the examiner has reason to believe that this process requirement, i.e. the sulfur atom concentration would have been the same as or substantially similar to that set forth by applicants, in the absence of clear factual evidence to the contrary. The sulfur source can be sulfur or hydrogen sulfide as required by present claim 13. See column 25, lines 25-33. The carbon source taught by Komatsu is the same as the carbon source set forth by applicants in present claim 14, such as methane, ethane, or propane. See column 22, lines 25-30. As to claim 15, Komatsu discloses the addition of at least one compound of the type contemplated by applicant in said claim 15. See column 16, lines 43-63. Regarding claims 16-18, Komatsu discloses production methods whereby the heating zone temperatures and carbon fiber are further heated at temperatures within the present claimed ranges. See column 23, lines 48-50, and column 24, lines 9-50.

Therefore, the teachings of Komatsu anticipate or in the alternative, render obvious the invention as claimed in present claims 11, 13-14, and 16-18.

***Response to Arguments***

5. Applicant's arguments with respect to claims 1-11 and 13-18 have been considered but are moot in view of the new ground(s) of rejection.

No claims are allowed,

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jill Gray whose telephone number is 571-272-1524. The examiner can normally be reached on M-Th and alternate Fridays 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jill Gray/  
Primary Examiner  
Art Unit 1794

jmg